



SEQUENCE LISTING

<110> MARKOWITZ, Sanford D.

<120> METHODS FOR TREATING PATIENTS AND IDENTIFYING THERAPEUTICS

<130> CWRU-P01-044

<140> 10/650,112

<141> 2003-08-26

<150> 10/274,177

<151> 2002-10-18

<150> 10/229,245

<151> 2002-08-26

<150> 60/406,296

<151> 2002-08-27

<160> 27

<170> PatentIn version 3.2

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<212> PRT

<213> Homo sapiens

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Glu Gly Gly Lys Leu Val Ile Lys Asp His Asp Glu Pro Ile Val Leu
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Arg Thr Arg His Ile Leu Ile Asp Asn Gly Gly Glu Leu His Ala Gly
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Ser Ala Leu Cys Pro Phe Gln Gly Asn Phe Thr Ile Ile Leu Tyr Gly
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Arg Ala Asp Glu Gly Ile Gln Pro Asp Pro Tyr Tyr Gly Leu Lys Tyr
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Ile Gly Val Gly Lys Gly Ala Leu Glu Leu His Gly Gln Lys Lys
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Leu Ser Trp Thr Phe Leu Asn Lys Thr Leu His Pro Gly Gly Met Ala
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Glu Gly Gly Tyr Phe Phe Glu Arg Ser Trp Gly His Arg Gly Val Ile
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Val His Val Ile Asp Pro Lys Ser Gly Thr Val Ile His Ser Asp Arg
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Phe Asp Thr Tyr Arg Ser Lys Lys Glu Ser Glu Arg Leu Val Gln Tyr
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Glu Gly Ser Arg Asn Leu Asp Asp Met Ala Arg Lys Ala Met Thr Lys
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Leu Gly Ser Lys His Phe Leu His Leu Gly Phe Arg His Pro Trp Ser
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Phe Leu Thr Val Lys Gly Asn Pro Ser Ser Ser Val Glu Asp His Ile
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Glu Tyr His Gly His Arg Gly Ser Ala Ala Ala Arg Val Phe Lys Leu
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Phe Gln Thr Glu His Gly Glu Tyr Phe Asn Val Ser Leu Ser Ser Glu
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Trp Val Gln Asp Val Glu Trp Thr Glu Trp Phe Asp His Asp Lys Val
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Ser Gln Thr Lys Gly Gly Glu Lys Ile Ser Asp Leu Trp Lys Ala His
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Asp Gly Val Asn Leu Ser Thr Glu Val Val Tyr Lys Lys Gly Gln Asp
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Ala Pro Asn Gln Val Lys Val Ala Gly Lys Pro Met Tyr Leu His Ile

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Ser Tyr Pro Gly Tyr Ile Pro Lys Pro Arg Gln Asp Cys Asn Ala Val
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His Gln Asp Ala Asp Pro Leu Lys Pro Arg Glu Pro Ala Ile Ile Arg
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His Phe Ile Ala Tyr Lys Asn Gln Asp His Gly Ala Trp Leu Arg Gly
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Phe Glu Asp Val Pro Ile Thr Ser Arg Val Phe Phe Gly Glu Pro Gly
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Pro Trp Phe Asn Gln Leu Asp Met Asp Gly Asp Lys Thr Ser Val Phe
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His Asp Val Asp Gly Ser Val Ser Glu Tyr Pro Gly Ser Tyr Leu Thr
930 935 940

Lys Asn Asp Asn Trp Leu Val Arg His Pro Asp Cys Ile Asn Val Pro
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Tyr Pro Arg Gly Thr Thr Phe Ser Ile Leu Ser Asp Val His Asn
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Tyr Tyr Trp Asp Glu Asp Ser Gly Leu Leu Phe Leu Lys Leu Lys
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Glu Gly Ile Gln Pro Asp Pro Tyr Tyr Gly Leu Lys Tyr Ile Gly Val
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Ile Asp Pro Lys Ser Gly Thr Val Ile His Ser Asp Arg Phe Asp Thr
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Gly His Arg Gly Ser Ala Ala Ala Arg Val Phe Lys Leu Phe Gln Thr
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690 695 700

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Ala Tyr Lys Asn Gln Asp His Gly Ala Trp Leu Arg Gly Gly Asp Val
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Trp Leu Asp Ser Cys Arg Phe Ala Asp Asn Gly Ile Gly Leu Thr Leu
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Ala Ser Gly Gly Thr Phe Pro Tyr Asp Asp Gly Ser Lys Gln Glu Ile
785 790 795 800

Lys Asn Ser Leu Phe Val Gly Glu Ser Gly Asn Val Gly Thr Glu Met
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Met Asp Asn Arg Ile Trp Gly Pro Gly Gly Leu Asp His Ser Gly Arg
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Thr Leu Pro Ile Gly Gln Asn Phe Pro Ile Arg Gly Ile Gln Leu Tyr
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Asp Gly Pro Ile Asn Ile Gln Asn Cys Thr Phe Arg Lys Phe Val Ala

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Leu Glu Gly Arg His Thr Ser Ala Leu Ala Phe Arg Leu Asn Asn Ala
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Trp Gln Ser Cys Pro His Asn Asn Val Thr Gly Ile Ala Phe Glu Asp
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Asn Trp Leu Val Arg His Pro Asp Cys Ile Asn Val Pro Asp Trp Arg
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Gly Ala Ile Cys Ser Gly Cys Tyr Ala Gln Met Tyr Ile Gln Ala Tyr
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Lys Thr Ser Asn Leu Arg Met Lys Ile Ile Lys Asn Asp Phe Pro Ser
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His Pro Leu Tyr Leu Glu Gly Ala Leu Thr Arg Ser Thr His Tyr Gln
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Gln Tyr Gln Pro Val Val Thr Leu Gln Lys Gly Tyr Thr Ile His
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Lys Gln Thr Ser Lys Thr Gly Val Phe Val Arg Thr Leu Gln Met
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Lys Lys Tyr Pro Ser Ser Glu	Asp Gly Ile Gln Val	Val Val Ile
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Asp Gly Asn Gln Gly Arg Val	Val Ser His Thr Ser	Phe Arg Asn
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Ser Ile Leu Gln Gly Ile Pro	Trp Gln Leu Phe Asn	Tyr Val Ala
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Thr Ile Pro Asp Asn Ser Ile	Val Leu Met Ala Ser	Lys Gly Arg
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His Phe Ala Ile Thr Val Cys Asp Gly Leu Asp Ile Ser Pro Glu Arg		
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Asn Gly Leu Phe Ser Thr Leu Ser Ser Ser Ala Ile Cys Ser Ser Ala
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Arg Arg Thr Leu Ala Val Leu Ala Ala His Cys Pro Phe Tyr Ser Trp
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Lys Arg Val Phe Leu Thr His Pro Ala Thr Cys Tyr Arg Thr Thr Cys
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Pro Gly Pro Cys Asp Ser Gln Pro Cys Gln Asn Gly Gly Thr Cys Val
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Pro Glu Gly Leu Asp Gly Tyr Gln Cys Leu Cys Pro Leu Ala Phe Gly
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Gly Glu Ala Asn Cys Ala Leu Lys Leu Ser Leu Glu Cys Arg Val Asp
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Leu Leu Phe Leu Leu Asp Ser Ser Ala Gly Thr Thr Leu Asp Gly Phe
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Thr Gly Gln Asp Arg Pro Arg Arg Val Val Val Leu Leu Thr Glu Ser
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His Ser Glu Asp Glu Val Ala Gly Pro Ala Arg His Ala Arg Ala Arg
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Glu Leu Leu Leu Leu Gly Val Gly Ser Glu Ala Val Arg Ala Glu Leu
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Gln Asp Leu Phe Asn Gln Ile Pro Glu Leu Gln Gly Lys Leu Cys Ser
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Gly Leu Asp Thr Lys Pro Thr Arg Ala Ala Met Leu Arg Ala Ile Ser
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Gln Ala Pro Tyr Leu Gly Gly Val Gly Ser Ala Gly Thr Ala Leu Leu
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His Ile Tyr Asp Lys Val Met Thr Val Gln Arg Gly Ala Arg Pro Gly
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Ala Ala Val Pro Ala Gln Lys Leu Arg Asn Asn Gly Ile Ser Val Leu
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aggccagggt tgtttggtt tgaggtgtgc tggatgaaa ggcaccctgg aagtggaaagg	240
ttcggtcatt cattaattaa ttacatctat aattgagggt ttgttcttaa gagcgagtcc	300
tttggaaagta ctttcattca aacagtgact gccacaaagg catcagatat tcaccacatt	360
ctcggctgcc tcagcacagc aagctttatt ctggacactg agatcctgtt ctgagctggc	420
tttcccttct ccaggctcgc tcaccctccc tttagagata gtggatggta agatgaccaa	480
tgctcagatt attcttctca ttgacaatgc caggatggca gtggatgact tcaacctcaa	540
gaaatggaga agcatcatgt gccaagtgac ttcaatgtca atgtgaaggt ggatacaggt	600
cccagggaaag atctgattaa ggtcctggag gatatgagac aagaatatga gcttataata	660
aagaagaagc atcgagactt ggacacttgg tataaagaac agtctgcagc catgtcccag	720
gaggcagcca gtccagccac tgtgcagagc agacaaggtg acatccacga actgaagcgc	780
acattccagg ccctggagat tgacactgcag gcacagtaca gcacgaaatc tgcttggaa	840
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gaataccaag tgctgctggg catcaaaacc cacctggaga aggaaatcac cacgtaccga	1020

cggtcctgg agggagagag tgaaggaca cggagaat caaagtcgag catgaaagtg 1080
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gacttctcat aatgctctta atatattgca ctTTTCTAAT caaagtgcga gtttatgagg 1380
gtaaagctct acTTTcctac tgcaGccttc agattctcat cattttgcat ctatTTTGTa 1440
gccaataaaaa ctccgcacta gcaaaaaaaaaaaa 1474

<210> 11
<211> 411
<212> DNA
<213> Homo sapiens

<400> 11

ttttttttt aaaaaaagag gcttggtaag ttttgatgc ttagttgact tttagcatta 60
tccagcattt gtattatgaa ccagttagta ctgtatTTT tctttccctt tcagaaagac 120
tcaaaggaa catataaatg ttccatttt ttaatgtggc aatagtgtag ctaacactgg 180
tacagacgga ataaacacac ctctaataattt ctcctgaaga ttgggtgatc cagttcaaa 240
taaggtatgg gaaaaacaga tgTTTcatt atcgccactt aatccttact tccgattata 300
attatacatg ttggctgtta ataactatac taaagcatgc ttgtgaaagt agacttctac 360
aaggacagaa aacccacaac aacaaagatc gatcacgaaa gacaaggcat a 411

<210> 12
<211> 2336
<212> DNA
<213> Homo sapiens

<400> 12

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gggagggtgg tgtgtacaga gctctaggac tcacgcacca ggccagtcgc ggatTTTggg 120
ccgaggcctg ggTTacaAGC agcaagtgcg cggTTgggc cactgcgagg ccgttttaga 180
aaactgttta aaacaaagag caattgtgg ataaatcagg aatagattct cttgaccatg 240
tgacatctga tgctgtggaa ctgcAAATC gaagtgataa ctcttctgtat agcagctt 300
ttaaaactca gtgtatccct tactcaccta aaggggagaa aagaaacccc attcgaaaat 360

ttgttcgtac acctgaaagt gttcacgcaa gtgattcatc aagtgactca tctttgaac 420
caataccatt gactataaaa gctattttg aaagattcaa gaacaggaaa aagagatata 480
aaaaaaagaa aaagaggagg taccagccaa caggaagacc acggggaaaga ccagaaggaa 540
ggagaaatcc tatatactca ctaatagata agaagaaaca atttagaagc agaggatctg 600
gcttcccatt tttagaatca gagaatgaaa aaaacgcacc ttggagaaaa atttaacgt 660
ttgagcaagc tggtgcaaga ggattttta actatattga aaagctgaag tatgaacacc 720
acctgaaaga atcattgaag caaatgaatg ttggtaaga tttagaaaat gaagattttg 780
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cagcagagga tgaggatgca acacatctt aagataacga atgtgatatac aaattggcag 900
gggatagttt catagtaagt tctgaattcc ctgtaaact gagtgtatac tttagaagaag 960
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gatcagtttc attaaaaagg tatgtatgca ttagaaaaga catttgtatg ggtcatttca 1860
aagagggctt atgaggctgt gaaacccaga gctcttaacg ctgtgaccaa agatggaagt 1920
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gaccttgatg gacagtggaa gaaatcacaa catggaattc ctcgaataac aatttattga 2160
ctttaataa ttttgtctaa tgctacatat acacaattaa aaaaccttta cactattct 2220
agaaagtcag catgtatccc tggctcgaag tttctctagt gttttctgtg gaaggaataa 2280
aaattttagt ttcaaa 2336

<210> 13
<211> 1361
<212> PRT
<213> Homo sapiens

<400> 13

Met Gly Ala Ala Gly Arg Gln Asp Phe Leu Phe Lys Ala Met Leu Thr
1 5 10 15

Ile Ser Trp Leu Thr Leu Thr Cys Phe Pro Gly Ala Thr Ser Thr Val
20 25 30

Ala Ala Gly Cys Pro Asp Gln Ser Pro Glu Leu Gln Pro Trp Asn Pro
35 40 45

Gly His Asp Gln Asp His His Val His Ile Gly Gln Gly Lys Thr Leu
50 55 60

Leu Leu Thr Ser Ser Ala Thr Val Tyr Ser Ile His Ile Ser Glu Gly
65 70 75 80

Gly Lys Leu Val Ile Lys Asp His Asp Glu Pro Ile Val Leu Arg Thr
85 90 95

Arg His Ile Leu Ile Asp Asn Gly Gly Glu Leu His Ala Gly Ser Ala
100 105 110

Leu Cys Pro Phe Gln Gly Asn Phe Thr Ile Ile Leu Tyr Gly Arg Ala
115 120 125

Asp Glu Gly Ile Gln Pro Asp Pro Tyr Tyr Gly Leu Lys Tyr Ile Gly
130 135 140

Val Gly Lys Gly Gly Ala Leu Glu Leu His Gly Gln Lys Lys Leu Ser
145 150 155 160

Trp Thr Phe Leu Asn Lys Thr Leu His Pro Gly Gly Met Ala Glu Gly
165 170 175

Gly Tyr Phe Phe Glu Arg Ser Trp Gly His Arg Gly Val Ile Val His
180 185 190

Val Ile Asp Pro Lys Ser Gly Thr Val Ile His Ser Asp Arg Phe Asp
195 200 205

Thr Tyr Arg Ser Lys Lys Glu Ser Glu Arg Leu Val Gln Tyr Leu Asn
210 215 220

Ala Val Pro Asp Gly Arg Ile Leu Ser Val Ala Val Asn Asp Glu Gly
225 230 235 240

Ser Arg Asn Leu Asp Asp Met Ala Arg Lys Ala Met Thr Lys Leu Gly
245 250 255

Ser Lys His Phe Leu His Leu Gly Phe Arg His Pro Trp Ser Phe Leu
260 265 270

Thr Val Lys Gly Asn Pro Ser Ser Val Glu Asp His Ile Glu Tyr
275 280 285

His Gly His Arg Gly Ser Ala Ala Ala Arg Val Phe Lys Leu Phe Gln
290 295 300

Thr Glu His Gly Glu Tyr Phe Asn Val Ser Leu Ser Ser Glu Trp Val
305 310 315 320

Gln Asp Val Glu Trp Thr Glu Trp Phe Asp His Asp Lys Val Ser Gln
325 330 335

Thr Lys Gly Gly Glu Lys Ile Ser Asp Leu Trp Lys Ala His Pro Gly
340 345 350

Lys Ile Cys Asn Arg Pro Ile Asp Ile Gln Ala Thr Thr Met Asp Gly
355 360 365

Val Asn Leu Ser Thr Glu Val Val Tyr Lys Lys Gly Gln Asp Tyr Arg
370 375 380

Phe Ala Cys Tyr Asp Arg Gly Arg Ala Cys Arg Ser Tyr Arg Val Arg
385 390 395 400

Phe Leu Cys Gly Lys Pro Val Arg Pro Lys Leu Thr Val Thr Ile Asp
405 410 415

Thr Asn Val Asn Ser Thr Ile Leu Asn Leu Glu Asp Asn Val Gln Ser
420 425 430

Trp Lys Pro Gly Asp Thr Leu Val Ile Ala Ser Thr Asp Tyr Ser Met
435 440 445

Tyr Gln Ala Glu Glu Phe Gln Val Leu Pro Cys Arg Ser Cys Ala Pro
450 455 460

Asn Gln Val Lys Val Ala Gly Lys Pro Met Tyr Leu His Ile Gly Glu
465 470 475 480

Glu Ile Asp Gly Val Asp Met Arg Ala Glu Val Gly Leu Leu Ser Arg
485 490 495

Asn Ile Ile Val Met Gly Glu Met Glu Asp Lys Cys Tyr Pro Tyr Arg
500 505 510

Asn His Ile Cys Asn Phe Phe Asp Phe Asp Thr Phe Gly Gly His Ile
515 520 525

Lys Phe Ala Leu Gly Phe Lys Ala Ala His Leu Glu Gly Thr Glu Leu
530 535 540

Lys His Met Gly Gln Gln Leu Val Gly Gln Tyr Pro Ile His Phe His
545 550 555 560

Leu Ala Gly Asp Val Asp Glu Arg Gly Gly Tyr Asp Pro Pro Thr Tyr
565 570 575

Ile Arg Asp Leu Ser Ile His His Thr Phe Ser Arg Cys Val Thr Val
580 585 590

His Gly Ser Asn Gly Leu Leu Ile Lys Asp Val Val Gly Tyr Asn Ser
595 600 605

Leu Gly His Cys Phe Phe Thr Glu Asp Gly Pro Glu Glu Arg Asn Thr
610 615 620

Phe Asp His Cys Leu Gly Leu Leu Val Lys Ser Gly Thr Leu Leu Pro
625 630 635 640

Ser Asp Arg Asp Ser Lys Met Cys Lys Met Ile Thr Glu Asp Ser Tyr
645 650 655

Pro Gly Tyr Ile Pro Lys Pro Arg Gln Asp Cys Asn Ala Val Ser Thr
660 665 670

Phe Trp Met Ala Asn Pro Asn Asn Asn Leu Ile Asn Cys Ala Ala Ala
675 680 685

Gly Ser Glu Glu Thr Gly Phe Trp Phe Ile Phe His His Val Pro Thr
690 695 700

Gly Pro Ser Val Gly Met Tyr Ser Pro Gly Tyr Ser Glu His Ile Pro
705 710 715 720

Leu Gly Lys Phe Tyr Asn Asn Arg Ala His Ser Asn Tyr Arg Ala Gly
725 730 735

Met Ile Ile Asp Asn Gly Val Lys Thr Thr Glu Ala Ser Ala Lys Asp
740 745 750

Lys Arg Pro Phe Leu Ser Ile Ile Ser Ala Arg Tyr Ser Pro His Gln
755 760 765

Asp Ala Asp Pro Leu Lys Pro Arg Glu Pro Ala Ile Ile Arg His Phe
770 775 780

Ile Ala Tyr Lys Asn Gln Asp His Gly Ala Trp Leu Arg Gly Gly Asp
785 790 795 800

Val Trp Leu Asp Ser Cys Arg Phe Ala Asp Asn Gly Ile Gly Leu Thr
805 810 815

Leu Ala Ser Gly Gly Thr Phe Pro Tyr Asp Asp Gly Ser Lys Gln Glu
820 825 830

Ile Lys Asn Ser Leu Phe Val Gly Glu Ser Gly Asn Val Gly Thr Glu
835 840 845

Met Met Asp Asn Arg Ile Trp Gly Pro Gly Gly Leu Asp His Ser Gly
850 855 860

Arg Thr Leu Pro Ile Gly Gln Asn Phe Pro Ile Arg Gly Ile Gln Leu
865 870 875 880

Tyr Asp Gly Pro Ile Asn Ile Gln Asn Cys Thr Phe Arg Lys Phe Val
885 890 895

Ala Leu Glu Gly Arg His Thr Ser Ala Leu Ala Phe Arg Leu Asn Asn
900 905 910

Ala Trp Gln Ser Cys Pro His Asn Asn Val Thr Gly Ile Ala Phe Glu
915 920 925

Asp Val Pro Ile Thr Ser Arg Val Phe Phe Gly Glu Pro Gly Pro Trp
930 935 940

Phe Asn Gln Leu Asp Met Asp Gly Asp Lys Thr Ser Val Phe His Asp
945 950 955 960

Val Asp Gly Ser Val Ser Glu Tyr Pro Gly Ser Tyr Leu Thr Lys Asn
965 970 975

Asp Asn Trp Leu Val Arg His Pro Asp Cys Ile Asn Val Pro Asp Trp
980 985 990

Arg Gly Ala Ile Cys Ser Gly Cys Tyr Ala Gln Met Tyr Ile Gln Ala
995 1000 1005

Tyr Lys Thr Ser Asn Leu Arg Met Lys Ile Ile Lys Asn Asp Phe
1010 1015 1020

Pro Ser His Pro Leu Tyr Leu Glu Gly Ala Leu Thr Arg Ser Thr
1025 1030 1035

His Tyr Gln Gln Tyr Gln Pro Val Val Thr Leu Gln Lys Gly Tyr
1040 1045 1050

Thr Ile His Trp Asp Gln Thr Ala Pro Ala Glu Leu Ala Ile Trp
1055 1060 1065

Leu Ile Asn Phe Asn Lys Gly Asp Trp Ile Arg Val Gly Leu Cys
1070 1075 1080

Tyr Pro Arg Gly Thr Thr Phe Ser Ile Leu Ser Asp Val His Asn
1085 1090 1095

Arg Leu Leu Lys Gln Thr Ser Lys Thr Gly Val Phe Val Arg Thr
1100 1105 1110

Leu Gln Met Asp Lys Val Glu Gln Ser Tyr Pro Gly Arg Ser His
1115 1120 1125

Tyr Tyr Trp Asp Glu Asp Ser Gly Leu Leu Phe Leu Lys Leu Lys
1130 1135 1140

Ala Gln Asn Glu Arg Glu Lys Phe Ala Phe Cys Ser Met Lys Gly
1145 1150 1155

Cys Glu Arg Ile Lys Ile Lys Ala Leu Ile Pro Lys Asn Ala Gly
1160 1165 1170

Val Ser Asp Cys Thr Ala Thr Ala Tyr Pro Lys Phe Thr Glu Arg
1175 1180 1185

Ala Val Val Asp Val Pro Met Pro Lys Lys Leu Phe Gly Ser Gln
1190 1195 1200

Leu Lys Thr Lys Asp His Phe Leu Glu Val Lys Met Glu Ser Ser
1205 1210 1215

Lys Gln His Phe Phe His Leu Trp Asn Asp Phe Ala Tyr Ile Glu
1220 1225 1230

Val Asp Gly Lys Lys Tyr Pro Ser Ser Glu Asp Gly Ile Gln Val
1235 1240 1245

Val Val Ile Asp Gly Asn Gln Gly Arg Val Val Ser His Thr Ser
1250 1255 1260

Phe Arg Asn Ser Ile Leu Gln Gly Ile Pro Trp Gln Leu Phe Asn
1265 1270 1275

Tyr Val Ala Thr Ile Pro Asp Asn Ser Ile Val Leu Met Ala Ser
1280 1285 1290

Lys Gly Arg Tyr Val Ser Arg Gly Pro Trp Thr Arg Val Leu Glu
1295 1300 1305

Lys Leu Gly Ala Asp Arg Gly Leu Lys Leu Lys Glu Gln Met Ala
1310 1315 1320

Phe Val Gly Phe Lys Gly Ser Phe Arg Pro Ile Trp Val Thr Leu
1325 1330 1335

Asp Thr Glu Asp His Lys Ala Lys Ile Phe Gln Val Val Pro Ile
1340 1345 1350

Pro Val Val Lys Lys Lys Leu
1355 1360

<210> 14
<211> 755
<212> PRT
<213> Homo sapiens

<400> 14

Met Pro Pro Phe Leu Leu Glu Ala Val Cys Val Phe Leu Phe Ser

1 5 10 15

Arg Val Pro Pro Ser Leu Pro Leu Gln Glu Val His Val Ser Lys Glu
 \ 20 25 30

Thr Ile Gly Lys Ile Ser Ala Ala Ser Lys Met Met Trp Cys Ser Ala
 35 40 45

Ala Val Asp Ile Met Phe Leu Leu Asp Gly Ser Asn Ser Val Gly Lys
 50 55 60

Gly Ser Phe Glu Arg Ser Lys His Phe Ala Ile Thr Val Cys Asp Gly
 65 70 75 80

Leu Asp Ile Ser Pro Glu Arg Val Arg Val Gly Ala Phe Gln Phe Ser
 85 90 95

Ser Thr Pro His Leu Glu Phe Pro Leu Asp Ser Phe Ser Thr Gln Gln
 100 105 110

Glu Val Lys Ala Arg Ile Lys Arg Met Val Phe Lys Gly Gly Arg Thr
 115 120 125

Glu Thr Glu Leu Ala Leu Lys Tyr Leu Leu His Arg Gly Leu Pro Gly
 130 135 140

Gly Arg Asn Ala Ser Val Pro Gln Ile Leu Ile Val Thr Asp Gly
 145 150 155 160

Lys Ser Gln Gly Asp Val Ala Leu Pro Ser Lys Gln Leu Lys Glu Arg
 165 170 175

Gly Val Thr Val Phe Ala Val Gly Val Arg Phe Pro Arg Trp Glu Glu
 180 185 190

Leu His Ala Leu Ala Ser Glu Pro Arg Gly Gln His Val Leu Leu Ala
 195 200 205

Glu Gln Val Glu Asp Ala Thr Asn Gly Leu Phe Ser Thr Leu Ser Ser
 210 215 220

Ser Ala Ile Cys Ser Ser Ala Thr Pro Asp Cys Arg Val Glu Ala His
 225 230 235 240

Pro Cys Glu His Arg Thr Leu Glu Met Val Arg Glu Phe Ala Gly Asn
 245 250 255

Ala Pro Cys Trp Arg Gly Ser Arg Arg Thr Leu Ala Val Leu Ala Ala
 260 265 270

His Cys Pro Phe Tyr Ser Trp Lys Arg Val Phe Leu Thr His Pro Ala
 275 280 285

Thr Cys Tyr Arg Thr Thr Cys Pro Gly Pro Cys Asp Ser Gln Pro Cys
 290 295 300

Gln Asn Gly Gly Thr Cys Val Pro Glu Gly Leu Asp Gly Tyr Gln Cys

305 310 315 320
Leu Cys Pro Leu Ala Phe Gly Gly Glu Ala Asn Cys Ala Leu Lys Leu
325 330 335
Ser Leu Glu Cys Arg Val Asp Leu Leu Phe Leu Leu Asp Ser Ser Ala
340 345 350
Gly Thr Thr Leu Asp Gly Phe Leu Arg Ala Lys Val Phe Val Lys Arg
355 360 365
Phe Val Arg Ala Val Leu Ser Glu Asp Ser Arg Ala Arg Val Gly Val
370 375 380
Ala Thr Tyr Ser Arg Glu Leu Leu Val Ala Val Pro Val Gly Glu Tyr
385 390 395 400
Gln Asp Val Pro Asp Leu Val Trp Ser Leu Asp Gly Ile Pro Phe Arg
405 410 415
Gly Gly Pro Thr Leu Thr Gly Ser Ala Leu Arg Gln Ala Ala Glu Arg
420 425 430
Gly Phe Gly Ser Ala Thr Arg Thr Gly Gln Asp Arg Pro Arg Arg Val
435 440 445
Val Val Leu Leu Thr Glu Ser His Ser Glu Asp Glu Val Ala Gly Pro
450 455 460
Ala Arg His Ala Arg Ala Arg Glu Leu Leu Leu Leu Gly Val Gly Ser
465 470 475 480
Glu Ala Val Arg Ala Glu Leu Glu Glu Ile Thr Gly Ser Pro Lys His
485 490 495
Val Met Val Tyr Ser Asp Pro Gln Asp Leu Phe Asn Gln Ile Pro Glu
500 505 510
Leu Gln Gly Lys Leu Cys Ser Arg Gln Arg Pro Gly Cys Arg Thr Gln
515 520 525
Ala Leu Asp Leu Val Phe Met Leu Asp Thr Ser Ala Ser Val Gly Pro
530 535 540
Glu Asn Phe Ala Gln Met Gln Ser Phe Val Arg Ser Cys Ala Leu Gln
545 550 555 560
Phe Glu Val Asn Pro Asp Val Thr Gln Val Gly Leu Val Val Tyr Gly
565 570 575
Ser Gln Val Gln Thr Ala Phe Gly Leu Asp Thr Lys Pro Thr Arg Ala
580 585 590
Ala Met Leu Arg Ala Ile Ser Gln Ala Pro Tyr Leu Gly Gly Val Gly
595 600 605
Ser Ala Gly Thr Ala Leu Leu His Ile Tyr Asp Lys Val Met Thr Val

610

615

620

Gln Arg Gly Ala Arg Pro Gly Val Pro Lys Ala Val Val Val Leu Thr
625 630 635 640

Gly Gly Arg Gly Ala Glu Asp Ala Ala Val Pro Ala Gln Lys Leu Arg
645 650 655

Asn Asn Gly Ile Ser Val Leu Val Val Gly Val Gly Pro Val Leu Ser
660 665 670

Glu Gly Leu Arg Arg Leu Ala Gly Pro Arg Asp Ser Leu Ile His Val
675 680 685

Ala Ala Tyr Ala Asp Leu Arg Tyr His Gln Asp Val Leu Ile Glu Trp
690 695 700

Leu Cys Gly Glu Ala Lys Gln Pro Val Asn Leu Cys Lys Pro Ser Pro
705 710 715 720

Cys Met Asn Glu Gly Ser Cys Val Leu Gln Asn Gly Ser Tyr Arg Cys
725 730 735

Lys Cys Arg Asp Gly Trp Glu Gly Pro His Cys Glu Asn Arg Phe Leu
740 745 750

Arg Arg Pro
755

<210> 15

<211> 300

<212> PRT

<213> Homo sapiens

<400> 15

Met Arg Ile Ala Val Ile Cys Phe Cys Leu Leu Gly Ile Thr Cys Ala
1 5 10 15

Ile Pro Val Lys Gln Ala Asp Ser Gly Ser Ser Glu Glu Lys Gln Leu
20 25 30

Tyr Asn Lys Tyr Pro Asp Ala Val Ala Thr Trp Leu Asn Pro Asp Pro
35 40 45

Ser Gln Lys Gln Asn Leu Leu Ala Pro Gln Thr Leu Pro Ser Lys Ser
50 55 60

Asn Glu Ser His Asp His Met Asp Asp Met Asp Asp Glu Asp Asp Asp
65 70 75 80

Asp His Val Asp Ser Gln Asp Ser Ile Asp Ser Asn Asp Ser Asp Asp
85 90 95

Val Asp Asp Thr Asp Asp Ser His Gln Ser Asp Glu Ser His His Ser
100 105 110

Asp Glu Ser Asp Glu Leu Val Thr Asp Phe Pro Thr Asp Leu Pro Ala
115 120 125

Thr Glu Val Phe Thr Pro Val Val Pro Thr Val Asp Thr Tyr Asp Gly
130 135 140

Arg Gly Asp Ser Val Val Tyr Gly Leu Arg Ser Lys Ser Lys Lys Phe
145 150 155 160

Arg Arg Pro Asp Ile Gln Tyr Pro Asp Ala Thr Asp Glu Asp Ile Thr
165 170 175

Ser His Met Glu Ser Glu Glu Leu Asn Gly Ala Tyr Lys Ala Ile Pro
180 185 190

Val Ala Gln Asp Leu Asn Ala Pro Ser Asp Trp Asp Ser Arg Gly Lys
195 200 205

Asp Ser Tyr Glu Thr Ser Gln Leu Asp Asp Gln Ser Ala Glu Thr His
210 215 220

Ser His Lys Gln Ser Arg Leu Tyr Lys Arg Lys Ala Asn Asp Glu Ser
225 230 235 240

Asn Glu His Ser Asp Val Ile Asp Ser Gln Glu Leu Ser Lys Val Ser
245 250 255

Arg Glu Phe His Ser His Glu Phe His Ser His Glu Asp Met Leu Val
260 265 270

Val Asp Pro Lys Ser Lys Glu Glu Asp Lys His Leu Lys Phe Arg Ile
275 280 285

Ser His Glu Leu Asp Ser Ala Ser Ser Glu Val Asn
290 295 300

<210> 16

<211> 829

<212> PRT

<213> Homo sapiens

<400> 16

Met Gly Leu Pro Arg Gly Pro Leu Ala Ser Leu Leu Leu Leu Gln Val
1 5 10 15

Cys Trp Leu Gln Cys Ala Ala Ser Glu Pro Cys Arg Ala Val Phe Arg
20 25 30

Glu Ala Glu Val Thr Leu Glu Ala Gly Gly Ala Glu Gln Glu Pro Gly
35 40 45

Gln Ala Leu Gly Lys Val Phe Met Gly Cys Pro Gly Gln Glu Pro Ala
50 55 60

Leu Phe Ser Thr Asp Asn Asp Asp Phe Thr Val Arg Asn Gly Glu Thr
65 70 75 80

Val Gln Glu Arg Arg Ser Leu Lys Glu Arg Asn Pro Leu Lys Ile Phe
85 90 95

Pro Ser Lys Arg Ile Leu Arg Arg His Lys Arg Asp Trp Val Val Ala
100 105 110

Pro Ile Ser Val Pro Glu Asn Gly Lys Gly Pro Phe Pro Gln Arg Leu
115 120 125

Asn Gln Leu Lys Ser Asn Lys Asp Arg Asp Thr Lys Ile Phe Tyr Ser
130 135 140

Ile Thr Gly Pro Gly Ala Asp Ser Pro Pro Glu Gly Val Phe Ala Val
145 150 155 160

Glu Lys Glu Thr Gly Trp Leu Leu Leu Asn Lys Pro Leu Asp Arg Glu
165 170 175

Glu Ile Ala Lys Tyr Glu Leu Phe Gly His Ala Val Ser Glu Asn Gly
180 185 190

Ala Ser Val Glu Asp Pro Met Asn Ile Ser Ile Ile Val Thr Asp Gln
195 200 205

Asn Asp His Lys Pro Lys Phe Thr Gln Asp Thr Phe Arg Gly Ser Val
210 215 220

Leu Glu Gly Val Leu Pro Gly Thr Ser Val Met Gln Val Thr Ala Thr
225 230 235 240

Asp Glu Asp Asp Ala Ile Tyr Thr Tyr Asn Gly Val Val Ala Tyr Ser
245 250 255

Ile His Ser Gln Glu Pro Lys Asp Pro His Asp Leu Met Phe Thr Ile
260 265 270

His Arg Ser Thr Gly Thr Ile Ser Val Ile Ser Ser Gly Leu Asp Arg
275 280 285

Glu Lys Val Pro Glu Tyr Thr Leu Thr Ile Gln Ala Thr Asp Met Asp
290 295 300

Gly Asp Gly Ser Thr Thr Ala Val Ala Val Val Glu Ile Leu Asp
305 310 315 320

Ala Asn Asp Asn Ala Pro Met Phe Asp Pro Gln Lys Tyr Glu Ala His
325 330 335

Val Pro Glu Asn Ala Val Gly His Glu Val Gln Arg Leu Thr Val Thr
340 345 350

Asp Leu Asp Ala Pro Asn Ser Pro Ala Trp Arg Ala Thr Tyr Leu Ile
355 360 365

Met Gly Gly Asp Asp Gly Asp His Phe Thr Ile Thr Thr His Pro Glu
370 375 380

Ser Asn Gln Gly Ile Leu Thr Thr Arg Lys Gly Leu Asp Phe Glu Ala
385 390 395 400

Lys Asn Gln His Thr Leu Tyr Val Glu Val Thr Asn Glu Ala Pro Phe
405 410 415

Val Leu Lys Leu Pro Thr Ser Thr Ala Thr Ile Val Val His Val Glu
420 425 430

Asp Val Asn Glu Ala Pro Val Phe Val Pro Pro Ser Lys Val Val Glu
435 440 445

Val Gln Glu Gly Ile Pro Thr Gly Glu Pro Val Cys Val Tyr Thr Ala
450 455 460

Glu Asp Pro Asp Lys Glu Asn Gln Lys Ile Ser Tyr Arg Ile Leu Arg
465 470 475 480

Asp Pro Ala Gly Trp Leu Ala Met Asp Pro Asp Ser Gly Gln Val Thr
485 490 495

Ala Val Gly Thr Leu Asp Arg Glu Asp Glu Gln Phe Val Arg Asn Asn
500 505 510

Ile Tyr Glu Val Met Val Leu Ala Met Asp Asn Gly Ser Pro Pro Thr
515 520 525

Thr Gly Thr Gly Thr Leu Leu Leu Thr Leu Ile Asp Val Asn Asp His
530 535 540

Gly Pro Val Pro Glu Pro Arg Gln Ile Thr Ile Cys Asn Gln Ser Pro
545 550 555 560

Val Arg Gln Val Leu Asn Ile Thr Asp Lys Asp Leu Ser Pro His Thr
565 570 575

Ser Pro Phe Gln Ala Gln Leu Thr Asp Asp Ser Asp Ile Tyr Trp Thr
580 585 590

Ala Glu Val Asn Glu Glu Gly Asp Thr Val Val Leu Ser Leu Lys Lys
595 600 605

Phe Leu Lys Gln Asp Thr Tyr Asp Val His Leu Ser Leu Ser Asp His
610 615 620

Gly Asn Lys Glu Gln Leu Thr Val Ile Arg Ala Thr Val Cys Asp Cys
625 630 635 640

His Gly His Val Glu Thr Cys Pro Gly Pro Trp Lys Gly Gly Phe Ile
645 650 655

Leu Pro Val Leu Gly Ala Val Leu Ala Leu Leu Phe Leu Leu Leu Val
660 665 670

Leu Leu Leu Leu Val Arg Lys Lys Arg Lys Ile Lys Glu Pro Leu Leu
675 680 685

Leu Pro Glu Asp Asp Thr Arg Asp Asn Val Phe Tyr Tyr Gly Glu Glu
690 695 700

Gly Gly Gly Glu Glu Asp Gln Asp Tyr Asp Ile Thr Gln Leu His Arg
705 710 715 720

Gly Leu Glu Ala Arg Pro Glu Val Val Leu Arg Asn Asp Val Ala Pro
725 730 735

Thr Ile Ile Pro Thr Pro Met Tyr Arg Pro Arg Pro Ala Asn Pro Asp
740 745 750

Glu Ile Gly Asn Phe Ile Ile Glu Asn Leu Lys Ala Ala Asn Thr Asp
755 760 765

Pro Thr Ala Pro Pro Tyr Asp Thr Leu Leu Val Phe Asp Tyr Glu Gly
770 775 780

Ser Gly Ser Asp Ala Ala Ser Leu Ser Ser Leu Thr Ser Ser Ala Ser
785 790 795 800

Asp Gln Asp Gln Asp Tyr Asp Tyr Leu Asn Glu Trp Gly Ser Arg Phe
805 810 815

Lys Lys Leu Ala Asp Met Tyr Gly Gly Glu Asp Asp
820 825

<210> 17
<211> 694
<212> PRT
<213> Homo sapiens

<400> 17

Met Lys His Leu Lys Arg Trp Trp Ser Ala Gly Gly Gly Leu Leu His
1 5 10 15

Leu Thr Leu Leu Ser Leu Ala Gly Leu Arg Val Asp Leu Asp Leu
20 25 30

Tyr Leu Leu Leu Pro Pro Pro Thr Leu Leu Gln Asp Glu Leu Leu Phe
35 40 45

Leu Gly Gly Pro Ala Ser Ser Ala Tyr Ala Leu Ser Pro Phe Ser Ala
50 55 60

Ser Gly Gly Trp Gly Arg Ala Gly His Leu His Pro Lys Gly Arg Glu
65 70 75 80

Leu Asp Pro Ala Ala Pro Pro Glu Gly Gln Leu Leu Arg Glu Val Arg
85 90 95

Ala Leu Gly Val Pro Phe Val Pro Arg Thr Ser Val Asp Ala Trp Leu
100 105 110

Val His Ser Val Ala Ala Gly Ser Ala Asp Glu Ala His Gly Leu Leu

115	120	125
Gly Ala Ala Ala Ala Ser Ser Thr Gly Gly Ala Gly Ala Ser Val Asp		
130	135	140
Gly Gly Ser Gln Ala Val Gln Gly Gly Gly Asp Pro Arg Ala Ala		
145	150	155
160		
Arg Ser Gly Pro Leu Asp Ala Gly Glu Glu Glu Lys Ala Pro Ala Glu		
165	170	175
Pro Thr Ala Gln Val Pro Asp Ala Gly Gly Cys Ala Ser Glu Glu Asn		
180	185	190
Gly Val Leu Arg Glu Lys His Glu Ala Val Asp His Ser Ser Gln His		
195	200	205
Glu Glu Asn Glu Glu Arg Val Ser Ala Gln Lys Glu Asn Ser Leu Gln		
210	215	220
Gln Asn Asp Asp Asp Glu Asn Lys Ile Ala Glu Lys Pro Asp Trp Glu		
225	230	235
240		
Ala Glu Lys Thr Thr Glu Ser Arg Asn Glu Arg His Leu Asn Gly Thr		
245	250	255
Asp Thr Ser Phe Ser Leu Glu Asp Leu Phe Gln Leu Leu Ser Ser Gln		
260	265	270
Pro Glu Asn Ser Leu Glu Gly Ile Ser Leu Gly Asp Ile Pro Leu Pro		
275	280	285
Gly Ser Ile Ser Asp Gly Met Asn Ser Ser Ala His Tyr His Val Asn		
290	295	300
Phe Ser Gln Ala Ile Ser Gln Asp Val Asn Leu His Glu Ala Ile Leu		
305	310	315
320		
Leu Cys Pro Asn Asn Thr Phe Arg Arg Asp Pro Thr Ala Arg Thr Ser		
325	330	335
Gln Ser Gln Glu Pro Phe Leu Gln Leu Asn Ser His Thr Thr Asn Pro		
340	345	350
Glu Gln Thr Leu Pro Gly Thr Asn Leu Thr Gly Phe Leu Ser Pro Val		
355	360	365
Asp Asn His Met Arg Asn Leu Thr Ser Gln Asp Leu Leu Tyr Asp Leu		
370	375	380
Asp Ile Asn Ile Phe Asp Glu Ile Asn Leu Met Ser Leu Ala Thr Glu		
385	390	395
400		
Asp Asn Phe Asp Pro Ile Asp Val Ser Gln Leu Phe Asp Glu Pro Asp		
405	410	415
Ser Asp Ser Gly Leu Ser Leu Asp Ser Ser His Asn Asn Thr Ser Val		

420 425 430

Ile Lys Ser Asn Ser Ser His Ser Val Cys Asp Glu Gly Ala Ile Gly
435 440 445

Tyr Cys Thr Asp His Glu Ser Ser Ser His His Asp Leu Glu Gly Ala
450 455 460

Val Gly Gly Tyr Tyr Pro Glu Pro Ser Lys Leu Cys His Leu Asp Gln
465 470 475 480

Ser Asp Ser Asp Phe His Gly Asp Leu Thr Phe Gln His Val Phe His
485 490 495

Asn His Thr Tyr His Leu Gln Pro Thr Ala Pro Glu Ser Thr Ser Glu
500 505 510

Pro Phe Pro Trp Pro Gly Lys Ser Gln Lys Ile Arg Ser Arg Tyr Leu
515 520 525

Glu Asp Thr Asp Arg Asn Leu Ser Arg Asp Glu Gln Arg Ala Lys Ala
530 535 540

Leu His Ile Pro Phe Ser Val Asp Glu Ile Val Gly Met Pro Val Asp
545 550 555 560

Ser Phe Asn Ser Met Leu Ser Arg Tyr Tyr Leu Thr Asp Leu Gln Val
565 570 575

Ser Leu Ile Arg Asp Ile Arg Arg Gly Lys Asn Lys Val Ala Ala
580 585 590

Gln Asn Cys Arg Lys Arg Lys Leu Asp Ile Ile Leu Asn Leu Glu Asp
595 600 605

Asp Val Cys Asn Leu Gln Ala Lys Lys Glu Thr Leu Lys Arg Glu Gln
610 615 620

Ala Gln Cys Asn Lys Ala Ile Asn Ile Met Lys Gln Lys Leu His Asp
625 630 635 640

Leu Tyr His Asp Ile Phe Ser Arg Leu Arg Asp Asp Gln Gly Arg Pro
645 650 655

Val Asn Pro Asn His Tyr Ala Leu Gln Cys Thr His Asp Gly Ser Ile
660 665 670

Leu Ile Val Pro Lys Glu Leu Val Ala Ser Gly His Lys Lys Glu Thr
675 680 685

Gln Lys Gly Lys Arg Lys
690

<210> 18
<211> 402
<212> PRT
<213> Homo sapiens

<400> 18

Met Lys Leu Glu Val Phe Val Pro Arg Ala Ala His Gly Asp Lys Gln
1 5 10 15

Gly Ser Asp Leu Glu Gly Ala Gly Ser Asp Ala Pro Ser Pro Leu
20 25 30

Ser Ala Ala Gly Asp Asp Ser Leu Gly Ser Asp Gly Asp Cys Ala Ala
35 40 45

Lys Pro Ser Ala Gly Gly Ala Arg Asp Thr Gln Gly Asp Gly Glu
50 55 60

Gln Ser Ala Gly Gly Pro Gly Ala Glu Glu Ala Ile Pro Ala Ala
65 70 75 80

Ala Ala Ala Ala Val Val Ala Glu Gly Ala Glu Ala Gly Ala Ala Gly
85 90 95

Pro Gly Ala Gly Gly Ala Gly Ser Gly Glu Gly Ala Arg Ser Lys Pro
100 105 110

Tyr Thr Arg Arg Pro Lys Pro Pro Tyr Ser Tyr Ile Ala Leu Ile Ala
115 120 125

Met Ala Ile Arg Asp Ser Ala Gly Gly Arg Leu Thr Leu Ala Glu Ile
130 135 140

Asn Glu Tyr Leu Met Gly Lys Phe Pro Phe Phe Arg Gly Ser Tyr Thr
145 150 155 160

Gly Trp Arg Asn Ser Val Arg His Asn Leu Ser Leu Asn Asp Cys Phe
165 170 175

Val Lys Val Leu Arg Asp Pro Ser Arg Pro Trp Gly Lys Asp Asn Tyr
180 185 190

Trp Met Leu Asn Pro Asn Ser Glu Tyr Thr Phe Ala Asp Gly Val Phe
195 200 205

Arg Arg Arg Arg Lys Arg Leu Ser His Arg Ala Pro Val Pro Ala Pro
210 215 220

Gly Leu Arg Pro Glu Glu Ala Pro Gly Leu Pro Ala Ala Pro Pro Pro
225 230 235 240

Ala Pro Ala Ala Pro Ala Ser Pro Arg Met Arg Ser Pro Ala Arg Gln
245 250 255

Glu Glu Arg Ala Ser Pro Ala Gly Lys Phe Ser Ser Ser Phe Ala Ile
260 265 270

Asp Ser Ile Leu Arg Lys Pro Phe Arg Ser Arg Arg Leu Arg Asp Thr
275 280 285

Ala Pro Gly Thr Thr Leu Gln Trp Gly Ala Ala Pro Cys Pro Pro Leu
290 295 300

Pro Ala Phe Pro Ala Leu Leu Pro Ala Ala Pro Cys Arg Ala Leu Leu
305 310 315 320

Pro Leu Cys Ala Tyr Gly Ala Gly Glu Pro Ala Arg Leu Gly Ala Arg
325 330 335

Glu Ala Glu Val Pro Pro Thr Ala Pro Pro Leu Leu Leu Ala Pro Leu
340 345 350

Pro Ala Ala Ala Pro Ala Lys Pro Leu Arg Gly Pro Ala Ala Gly Gly
355 360 365

Ala His Leu Tyr Cys Pro Leu Arg Leu Pro Ala Ala Leu Gln Ala Ala
370 375 380

Leu Val Arg Arg Pro Gly Pro His Leu Ser Tyr Pro Val Glu Thr Leu
385 390 395 400

Leu Ala

<210> 19

<211> 209

<212> PRT

<213> Homo sapiens

<400> 19

Met Glu Lys His His Val Pro Ser Asp Phe Asn Val Asn Val Lys Val
1 5 10 15

Asp Thr Gly Pro Arg Glu Asp Leu Ile Lys Val Leu Glu Asp Met Arg
20 25 30

Gln Glu Tyr Glu Leu Ile Ile Lys Lys Lys His Arg Asp Leu Asp Thr
35 40 45

Trp Tyr Lys Glu Gln Ser Ala Ala Met Ser Gln Glu Ala Ala Ser Pro
50 55 60

Ala Thr Val Gln Ser Arg Gln Gly Asp Ile His Glu Leu Lys Arg Thr
65 70 75 80

Phe Gln Ala Leu Glu Ile Asp Leu Gln Ala Gln Tyr Ser Thr Lys Ser
85 90 95

Ala Leu Glu Asn Met Leu Ser Glu Thr Gln Ser Arg Tyr Ser Cys Lys
100 105 110

Leu Gln Asp Met Gln Glu Ile Ile Ser His Tyr Glu Glu Glu Leu Thr
115 120 125

Gln Leu Arg His Glu Leu Glu Arg Gln Asn Asn Glu Tyr Gln Val Leu
130 135 140

Leu Gly Ile Lys Thr His Leu Glu Lys Glu Ile Thr Thr Tyr Arg Arg
145 150 155 160

Leu Leu Glu Gly Glu Ser Glu Gly Thr Arg Glu Glu Ser Lys Ser Ser
165 170 175

Met Lys Val Ser Ala Thr Pro Lys Ile Lys Ala Ile Thr Gln Glu Thr
180 185 190

Ile Asn Gly Arg Leu Val Leu Cys Gln Val Asn Glu Ile Gln Lys His
195 200 205

Ala

<210> 20

<211> 278

<212> PRT

<213> Homo sapiens

<400> 20

Met Asp Lys Ser Gly Ile Asp Ser Leu Asp His Val Thr Ser Asp Ala
1 5 10 15

Val Glu Leu Ala Asn Arg Ser Asp Asn Ser Ser Asp Ser Ser Leu Phe
20 25 30

Lys Thr Gln Cys Ile Pro Tyr Ser Pro Lys Gly Glu Lys Arg Asn Pro
35 40 45

Ile Arg Lys Phe Val Arg Thr Pro Glu Ser Val His Ala Ser Asp Ser
50 55 60

Ser Ser Asp Ser Ser Phe Glu Pro Ile Pro Leu Thr Ile Lys Ala Ile
65 70 75 80

Phe Glu Arg Phe Lys Asn Arg Lys Lys Arg Tyr Lys Lys Lys Lys Lys
85 90 95

Arg Arg Tyr Gln Pro Thr Gly Arg Pro Arg Gly Arg Pro Glu Gly Arg
100 105 110

Arg Asn Pro Ile Tyr Ser Leu Ile Asp Lys Lys Lys Gln Phe Arg Ser
115 120 125

Arg Gly Ser Gly Phe Pro Phe Leu Glu Ser Glu Asn Glu Lys Asn Ala
130 135 140

Pro Trp Arg Lys Ile Leu Thr Phe Glu Gln Ala Val Ala Arg Gly Phe
145 150 155 160

Phe Asn Tyr Ile Glu Lys Leu Lys Tyr Glu His His Leu Lys Glu Ser
165 170 175

Leu Lys Gln Met Asn Val Gly Glu Asp Leu Glu Asn Glu Asp Phe Asp
180 185 190

Ser Arg Arg Tyr Lys Phe Leu Asp Asp Asp Gly Ser Ile Ser Pro Ile
195 200 205

Glu Glu Ser Thr Ala Glu Asp Glu Asp Ala Thr His Leu Glu Asp Asn
210 215 220

Glu Cys Asp Ile Lys Leu Ala Gly Asp Ser Phe Ile Val Ser Ser Glu
225 230 235 240

Phe Pro Val Arg Leu Ser Val Tyr Leu Glu Glu Asp Ile Thr Glu
245 250 255

Glu Ala Ala Leu Ser Lys Lys Arg Ala Thr Lys Ala Lys Asn Thr Gly
260 265 270

Gln Arg Gly Leu Lys Met
275

<210> 21

<211> 488

<212> PRT

<213> C-TERMINAL PORTION OF ColoUp2

<400> 21

Ala Val Leu Ala Ala His Cys Pro Phe Tyr Ser Trp Lys Arg Val Phe
1 5 10 15

Leu Thr His Pro Ala Thr Cys Tyr Arg Thr Thr Cys Pro Gly Pro Cys
20 25 30

Asp Ser Gln Pro Cys Gln Asn Gly Gly Thr Cys Val Pro Glu Gly Leu
35 40 45

Asp Gly Tyr Gln Cys Leu Cys Pro Leu Ala Phe Gly Gly Glu Ala Asn
50 55 60

Cys Ala Leu Lys Leu Ser Leu Glu Cys Arg Val Asp Leu Leu Phe Leu
65 70 75 80

Leu Asp Ser Ser Ala Gly Thr Thr Leu Asp Gly Phe Leu Arg Ala Asp
85 90 95

Val Phe Val Lys Arg Phe Val Arg Ala Val Leu Ser Glu Asp Ser Arg
100 105 110

Ala Arg Val Gly Val Ala Thr Tyr Ser Arg Glu Leu Leu Val Ala Val
115 120 125

Pro Val Gly Glu Tyr Gln Asp Val Pro Asp Leu Val Trp Ser Leu Asp
130 135 140

Gly Ile Pro Phe Arg Gly Gly Pro Thr Leu Thr Gly Ser Ala Leu Arg
145 150 155 160

Gln Ala Ala Glu Arg Gly Phe Gly Ser Ala Thr Arg Thr Gly Gln Asp
165 170 175

Arg Pro Arg Arg Val Val Val Leu Leu Thr Glu Ser His Ser Glu Asp
180 185 190

Glu Val Ala Gly Pro Ala Arg His Ala Arg Ala Arg Glu Leu Leu Leu
195 200 205

Leu Gly Val Gly Ser Glu Ala Val Arg Ala Glu Leu Glu Glu Ile Thr
210 215 220

Gly Ser Pro Lys His Val Met Val Tyr Ser Asp Pro Gln Asp Leu Phe
225 230 235 240

Asn Gln Ile Pro Glu Leu Gln Gly Lys Leu Cys Ser Arg Gln Arg Pro
245 250 255

Gly Cys Arg Thr Gln Ala Leu Asp Leu Val Phe Met Leu Asp Thr Ser
260 265 270

Ala Ser Val Gly Pro Glu Asn Phe Ala Gln Met Gln Ser Phe Val Arg
275 280 285

Ser Cys Ala Leu Gln Phe Glu Val Asn Pro Asp Val Thr Gln Val Gly
290 295 300

Leu Val Val Tyr Gly Ser Gln Val Gln Thr Ala Phe Gly Leu Asp Thr
305 310 315 320

Lys Pro Thr Arg Ala Ala Met Leu Arg Ala Ile Ser Gln Ala Pro Tyr
325 330 335

Leu Gly Gly Val Gly Ser Ala Gly Thr Ala Leu Leu His Ile Tyr Asp
340 345 350

Lys Val Met Thr Val Gln Arg Gly Ala Arg Pro Gly Val Pro Lys Ala

355

360

365

Val Val Val Leu Thr Gly Gly Arg Gly Ala Glu Asp Ala Ala Val Pro
370 375 380

Ala Gln Lys Leu Arg Asn Asn Gly Ile Ser Val Leu Val Val Gly Val
385 390 395 400

Gly Pro Val Leu Ser Glu Gly Leu Arg Arg Leu Ala Gly Pro Arg Asp
405 410 415

Ser Leu Ile His Val Ala Ala Tyr Ala Asp Leu Arg Tyr His Gln Asp
420 425 430

Val Leu Ile Glu Trp Leu Cys Gly Glu Ala Lys Gln Pro Val Asn Leu
435 440 445

Cys Lys Pro Ser Pro Cys Met Asn Glu Gly Ser Cys Val Leu Gln Asn
450 455 460

Gly Ser Tyr Arg Cys Lys Cys Arg Asp Gly Trp Glu Gly Pro His Cys
465 470 475 480

Glu Asn Arg Phe Leu Arg Arg Pro
485

<210> 22
<211> 403
<212> PRT
<213> HUMAN FOXQ1

<400> 22

Met Lys Leu Glu Val Phe Val Pro Arg Ala Ala His Gly Asp Lys Gln
1 5 10 15

Gly Ser Asp Leu Glu Gly Ala Gly Gly Ser Asp Ala Pro Ser Pro Leu
20 25 30

Ser Ala Ala Gly Asp Asp Ser Leu Gly Ser Asp Gly Asp Cys Ala Ala
35 40 45

Asn Ser Pro Ala Ala Gly Gly Ala Arg Asp Pro Pro Gly Asp Gly
50 55 60

Glu Gln Ser Ala Gly Gly Gly Pro Gly Ala Glu Glu Ala Ile Pro Ala
65 70 75 80

Ala Ala Ala Ala Ala Val Val Ala Glu Gly Ala Glu Ala Gly Ala Ala
85 90 95

Gly Pro Gly Ala Gly Gly Ala Gly Ser Gly Glu Gly Ala Arg Ser Lys
100 105 110

Pro Tyr Thr Arg Arg Pro Lys Pro Pro Tyr Ser Tyr Ile Ala Leu Ile
115 120 125

Ala Met Ala Ile Arg Asp Ser Ala Gly Gly Arg Leu Thr Leu Ala Glu
130 135 140

Ile Asn Glu Tyr Leu Met Gly Lys Phe Pro Phe Phe Arg Gly Ser Tyr
145 150 155 160

Thr Gly Trp Arg Asn Ser Val Arg His Asn Leu Ser Leu Asn Asp Cys
165 170 175

Phe Val Lys Val Leu Arg Asp Pro Ser Arg Pro Trp Gly Lys Asp Asn
180 185 190

Tyr Trp Met Leu Asn Pro Asn Ser Glu Tyr Thr Phe Ala Asp Gly Val
195 200 205

Phe Arg Arg Arg Lys Arg Leu Ser His Arg Ala Pro Val Pro Ala
210 215 220

Pro Gly Leu Arg Pro Glu Glu Ala Pro Gly Leu Pro Ala Ala Pro Pro
225 230 235 240

Pro Ala Pro Ala Ala Pro Ala Ser Pro Arg Met Arg Ser Pro Ala Arg
245 250 255

Gln Glu Glu Arg Ala Ser Pro Ala Gly Lys Phe Ser Ser Ser Phe Ala
260 265 270

Ile Asp Ser Ile Leu Arg Lys Pro Phe Arg Ser Arg Arg Leu Arg Asp
275 280 285

Thr Ala Pro Gly Thr Thr Leu Gln Trp Gly Ala Ala Pro Cys Pro Pro
290 295 300

Leu Pro Ala Phe Pro Ala Leu Leu Pro Ala Ala Pro Cys Arg Ala Leu
305 310 315 320

Leu Pro Leu Cys Ala Tyr Gly Ala Gly Glu Pro Ala Arg Leu Gly Ala
325 330 335

Arg Glu Ala Glu Val Pro Pro Thr Ala Pro Pro Leu Leu Leu Ala Pro
340 345 350

Leu Pro Ala Ala Ala Pro Ala Lys Pro Leu Arg Gly Pro Ala Ala Gly
355 360 365

Gly Ala His Leu Tyr Cys Pro Leu Arg Leu Pro Ala Ala Leu Gln Ala
370 375 380

Ala Ser Val Arg Arg Pro Gly Pro His Leu Pro Tyr Pro Val Glu Thr
385 390 395 400

Leu Leu Ala

<210> 23
<211> 400
<212> PRT
<213> MOUSE FOXQ1

<400> 23

Met Lys Leu Glu Val Phe Val Pro Arg Ala Ala His Gly Asp Lys Met
1 5 10 15

Gly Ser Asp Leu Glu Gly Ala Gly Ser Ser Asp Val Pro Ser Pro Leu
20 25 30

Ser Ala Ala Gly Asp Asp Ser Leu Gly Ser Asp Gly Asp Cys Ala Ala
35 40 45

Asn Ser Pro Ala Ala Gly Ser Gly Ala Gly Asp Leu Glu Gly Gly Gly
50 55 60

Gly Glu Arg Asn Ser Ser Gly Gly Pro Ser Ala Gln Asp Gly Pro Glu
65 70 75 80

Ala Thr Asp Asp Ser Arg Thr Gln Ala Ser Ala Ala Gly Pro Cys Ala
85 90 95

Gly Gly Val Gly Gly Gly Glu Gly Ala Arg Ser Lys Pro Tyr Thr Arg
100 105 110

Arg Pro Lys Pro Pro Tyr Ser Tyr Ile Ala Leu Ile Ala Met Ala Ile
115 120 125

Arg Asp Ser Ala Gly Gly Arg Leu Thr Leu Ala Glu Ile Asn Glu Tyr
130 135 140

Leu Met Gly Lys Phe Pro Phe Phe Arg Gly Ser Tyr Thr Gly Trp Arg
145 150 155 160

Asn Ser Val Arg His Asn Leu Ser Leu Asn Asp Cys Phe Val Lys Val
165 170 175

Leu Arg Asp Pro Ser Arg Pro Trp Gly Lys Asp Asn Tyr Trp Met Leu
180 185 190

Asn Pro Asn Ser Glu Tyr Thr Phe Ala Asp Gly Val Phe Arg Arg Arg
195 200 205

Arg Lys Arg Leu Ser His Arg Thr Thr Val Ser Ala Ser Gly Leu Arg
210 215 220

Pro Glu Glu Ala Pro Pro Gly Pro Ala Gly Thr Pro Gln Pro Ala Pro
225 230 235 240

Ala Ala Arg Ser Ser Pro Ile Ala Arg Ser Pro Ala Arg Gln Glu Glu
245 250 255

Arg Ser Ser Pro Ala Ser Lys Phe Ser Ser Ser Phe Ala Ile Asp Ser
260 265 270

Ile Leu Ser Lys Pro Phe Arg Ser Arg Arg Asp Gly Asp Ser Ala Leu
275 280 285

Gly Val Gln Leu Pro Trp Gly Ala Ala Pro Cys Pro Pro Leu Arg Ala
290 295 300

Tyr Pro Ala Leu Leu Pro Ala Ala Pro Gly Gly Ala Leu Leu Pro Leu
305 310 315 320

Cys Ala Tyr Gly Ala Ser Glu Pro Thr Leu Leu Ala Ser Arg Gly Thr
325 330 335

Glu Val Gln Pro Ala Ala Pro Leu Leu Ala Pro Leu Ser Thr Ala
340 345 350

Ala Pro Ala Lys Pro Phe Arg Gly Pro Glu Thr Ala Gly Ala Ala His
355 360 365

Leu Tyr Cys Pro Leu Arg Leu Pro Thr Ala Leu Gln Ala Ala Ala Ala
370 375 380

Cys Gly Pro Gly Pro His Leu Ser Tyr Pro Val Glu Thr Leu Leu Ala
385 390 395 400

<210> 24
<211> 400
<212> PRT
<213> RAT FOX Q1

<400> 24

Met Lys Leu Glu Val Phe Ala Pro Arg Ala Ala His Gly Asp Lys Met
1 5 10 15

Gly Ser Asp Leu Glu Gly Ala Gly Ser Ser Asp Val Pro Ser Pro Leu
20 25 30

Ser Ala Ala Gly Asp Asp Ser Leu Gly Ser Asp Gly Asp Cys Ala Ala
35 40 45

Asn Ser Pro Ala Ala Gly Arg Gly Ala Val Asp Leu Glu Gly Gly
50 55 60

Gly Glu Arg Asn Ser Ser Gly Gly Ala Ser Thr Gln Asp Asp Pro Glu
65 70 75 80

Val Thr Asp Gly Ser Arg Thr Gln Ala Ser Pro Val Gly Pro Cys Ala
85 90 95

Gly Ser Val Gly Gly Glu Gly Ala Arg Ser Lys Pro Tyr Thr Arg
100 105 110

Arg Pro Lys Pro Pro Tyr Ser Tyr Ile Ala Leu Ile Ala Met Ala Ile
115 120 125

Arg Asp Ser Ala Gly Gly Arg Leu Thr Leu Ala Glu Ile Asn Glu Tyr
130 135 140

Leu Met Gly Lys Phe Pro Phe Phe Arg Gly Ser Tyr Thr Gly Trp Arg
145 150 155 160

Asn Ser Val Arg His Asn Leu Ser Leu Asn Asp Cys Phe Val Lys Val
165 170 175

Leu Arg Asp Pro Ser Arg Pro Trp Gly Lys Asp Asn Tyr Trp Met Leu
180 185 190

Asn Pro Asn Ser Glu Tyr Thr Phe Ala Asp Gly Val Phe Arg Arg Arg
195 200 205

Arg Lys Arg Leu Ser His Arg Thr Thr Val Ser Ala Ser Gly Leu Arg
210 215 220

Pro Glu Glu Ala Pro Pro Gly Pro Ala Gly Thr Pro Gln Pro Ala Pro
225 230 235 240

Thr Ala Gly Ser Ser Pro Ile Ala Arg Ser Pro Ala Arg Gln Glu Glu
245 250 255

Gly Ser Ser Pro Ala Ser Lys Phe Ser Ser Ser Phe Ala Ile Asp Ser
260 265 270

Ile Leu Ser Lys Pro Phe Arg Ser Arg Arg Asp Gly Asp Pro Ala Leu
275 280 285

Gly Val Gln Leu Pro Trp Ser Ala Ala Pro Cys Pro Pro Leu Arg Ala
290 295 300

Tyr Pro Ala Leu Leu Pro Ala Ser Ser Gly Gly Ala Leu Leu Pro Leu
305 310 315 320

Cys Ala Tyr Gly Ala Gly Glu Pro Thr Leu Leu Ala Ser Arg Gly Ala
325 330 335

Glu Val Gln Pro Ala Ala Pro Leu Leu Leu Ala Pro Leu Ser Thr Ala
340 345 350

Ala Pro Ala Lys Pro Phe Arg Gly Pro Glu Thr Ala Gly Ala Ala His
355 360 365

Leu Tyr Cys Pro Leu Arg Leu Pro Thr Ala Leu Gln Ala Ala Ala Ala
370 375 380

Cys Gly Pro Gly Pro His Leu Ser Tyr Arg Val Glu Thr Leu Leu Ala
385 390 395 400

<210> 25

<211> 1212

<212> DNA

<213> HUMAN FOXQ1

<400> 25

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gagggcgcgg gcggcagcga cgccgcgtcc ccgcgttcgg cggcgggaga cgactccctg 120
ggctcagatg gggactgcgc ggccaacacgc ccggccgcgg gcccggcgc cagagatccg 180
ccggcgcacg gcgaacacagag tgccggaggc gggccggcgg cggaggaggc gatccggca 240
gcagctgctg cagcggtggt ggcggaggcgc gcccggcggg gcccggcgc 300
ggccggcgcgg ggagcggcga gggtcacgc agcaagccat atacgcggcg gcccagccc 360
ccctactcgt acatcgcgct catgccatg gccatccgcg actccggcggg cggccgttg 420
acgctggcgg agatcaacga gtacctcatg ggcaagttcc ctttttccg cggcagctac 480
acgggctggc gcaactccgt gcccacaac ctttcgtca acgactgtt cgtcaaggtg 540
ctgcgcgacc cctcgccggcc ctggggcaag gacaactact ggatgctcaa ccccaacagc 600
gagttacacct tcggccacgg ggtttccgc cggccggca agcgctcag ccaccggcgc 660
ccggcccccg cgccccggct gcccggcgg gaggccccgg gcctccccgc cgccccggc 720
cccgccggcc cggccggcc atgcgtcgcc cggccggcca ggaggagcgc 780
gcccggcccg cggcaagtt ctccagctcc ttgcgcatcg acagcatct gcccagccc 840
ttccgcagcc gcccgttcag ggacacggcc cccggacga cgcttcagtg gggccggcgc 900
ccctggccgc cgctgcccgc gttccccgcg ctcccccg cggccggccctg cagggccctg 960
ctgcgcgtct gcccgtacgg cggggcggcag cggccggcggc tggggccgcg cggaggccgag 1020
gtgccaccga cggccggcc cctcctgttt gcacccatcc cggccggcggc ccccgccaag 1080

ccactccgag gccccggcggc cgccggcgcg cacctgtact gccccctgcg gctgcccga 1140
gccccctgcagg cggcctcagt ccgcgcgcct ggcccgcacc tgccgtaccc ggtggagacg 1200
ctcctagcct ga 1212

<210> 26
<211> 1203
<212> DNA
<213> MOUSE FOXQ1

<400> 26
atgaaattgg aggtgttcgt cccacgcgca gcccacgggg acaaaatggg cagcgatctg 60
gagggggccg gcagcagcga cgtgccatct ccactgtccg cggctggtga cgactcctta 120
ggctcagacg gggactgtgc agccaaacagc ccggcggcgg gcagcggcgc cggggatctg 180
gaaggtggcg gcggcgagag gaattcgagt ggcggccga gcgcccaaga cggtccggag 240
gcaactgatg acagcagaac gcaggcctcc gcggcagggc cgtgcgcggg cggcgtggc 300
ggcggcgagg gcgcgcgcag caagccgtac acgcggcggc ccaagcccc atactcctac 360
atcgctctca tcgccatggc catccgcgac tccgcggcgc gacgcctgac actggccgag 420
atcaacgagt acctcatggg caagttcccc ttttccggg gcagctacac gggctggcgc 480
aactccgtgc gccacaaacct ctcgctcaac gactgtttcg tcaagggtgt gcgcgacccc 540
tcgcggccct gggcaagga caactactgg atgctcaacc ccaacagcga atacacccctc 600
gccgacgggg tcttccgccg ccgcgcgaag cgcctcagcc accggaccac agtctccgc 660
tccgggctgc ggccggagga agccccaccc ggacctgccc ggaccccgca gcccgcgccc 720
gccgccccgt cctcccgat cgcgcgctcg ccggctcgcc aggaggagcg ctccagccct 780
gcgagcaagt tctccagctc cttcgccatc gacagcattc tcagcaagcc ttttcgcagc 840
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ccgctgcgcg cctatcccgc gtccttccc gcggcgcggc gtggcgctct gtcaccgctc 960
tgtgcttacg gcgcaagcga gcctacgctg ctggcgctgc gcgggaccga ggtgcagccc 1020
gcggcgcccc ttctgctggc gccccctctcc accgcggctc cagccaagcc attccgaggt 1080
ccggagaccc cgccgcggc gcacctgtac tgccccctac ggctgcccac ggccctgcag 1140
gcggcagcgg cctgcgggtcc cgtccgcac ctgtcctacc cggtgagac tctgcttagct 1200
tga 1203

<210> 27

<211> 1203
<212> DNA
<213> RAT FOXQ1

<400> 27
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gagggggccg gcagcagcga cgtgccatct ccgctgtccg cggctggcga cgactcctta 120
ggctctgacg gggactgtgc agccaacagc ccggcggcgg gcagaggcgc cgtggatctg 180
gaaggcggcg gcggcgagag gaattcgagt ggcggggcga gcacccaaga cgatcccag 240
gtgaccgatg gcagcagaac gcaggcctcc ccgggtggggc cgtgcgcggg cagcgtggc 300
ggcggtgagg gcgcgcgcag caagccgtac acgcggcggc ccaaggcccc ctactcctac 360
atcgcaactca tcgccatggc catccgcgac tccgcggcgg gacgcctgac gctggccgag 420
atcaacgagt acctcatggg caagttcccc tttttccggg gcagctacac gggctggcgc 480
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accgcggct cctcccaat cgcgcgtcg cccgctcgcc aggaggaggg ctccagcccg 780
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